

REMARKS

Applicants have carefully considered the September 27, 2005 Office Action, and the comments that follow are presented in a bona fide effort to address all issues raised in that Action and thereby place this case in condition for allowance. Entry of the present Request for Reconsideration is respectfully solicited. It is believed that this response places this case in condition for allowance. Hence, prompt favorable reconsideration of this case is solicited.

Claims 13, 21-23 and 25-27 were rejected under 35 U.S.C. § 102(b) predicated upon JP 58-67858. The Examiner asserted that JP 58-67858 discloses a titanium boronitride layer within the claimed proportions of claim 13. Applicants respectfully traverse.

Independent claim 13 describes a coated cutting tool comprising a substrate and a coating on the substrate, the coating comprising an inner layer, an intermediate layer, and an outer layer, each comprising at least one layer. The intermediate layer of claim 13 is composed of titanium boronitride, TiB_xN_y (x, y: atomic %), that satisfies the following: $0.001 < x/(x + y) < 0.04$ (formula 1).

Applicants would stress that the factual determination of lack of novelty under 35 U.S.C. § 102 requires the identical disclosure in a single reference of each element of a claimed invention, such that the identically claimed invention is placed into the recognized possession of one having ordinary skill in the art. *Dayco Prods., Inc. v. Total Containment, Inc.*, 329 F.3d 1358, 66 USPQ2d 1801 (Fed. Cir. 2003); *Crown Operations International Ltd. v. Solutia Inc.*, 289 F.3d 1367, 62 USPQ2d 1917 (Fed. Cir. 2002). There are significant differences between the claimed invention and the hard alloy member disclosed by JP 58-67858 that would preclude the factual determination that JP 58-67858 identically describes the claimed invention within the meaning of 35 U.S.C. § 102.

Specifically, JP 58-67858 discloses (at abstract) that Ti(BN) has a composition shown by formula $Ti(B_xN_{1-x})$ wherein x is 0.05 or more and 0.4 or less. In contrast, the present claimed subject matter requires a titanium boronitride layer, TiB_xN_y (x and y are atomic %), that satisfies the following: $0.001 < x/(x + y) < 0.04$ (formula 1). In other words with formula 1 of the present invention $x+y=1$ and, therefore, x of the present invention is smaller than x disclosed in JP 58-67858. Thus, contrary to the Examiner's assertion, JP 58-67858 does not identically a titanium boronitride intermediate layer within the claimed proportions of claim 13.

As described in the present specification, at page 6, the present invention limits the amount of boron in the intermediate layer to reduce the reactivity with iron when the intermediate layer is exposed due to the wear or spalling of the outer layer. The relevant portion of page 6 is repeated below for the Examiner's convenience:

There is an idea of using TiB_2 as an intermediate layer to increase the bonding strength between the inner and outer layers. However, as can be seen from the graph in Fig. 2, TiB_2 has a reactivity with iron as high as about 35 times that of TiN. Therefore, the workpiece readily adheres. There is another idea of using TiN in place of TiBN as the intermediate layer. However, TiN not only produces a low bonding strength between the inner and outer layers but also has a notably low hardness. Therefore, the tool life cannot be increased. The present invention limits the amount of boron in the intermediate layer to reduce the reactivity with iron when the intermediate layer is exposed due to the wear or spalling of the outer layer. In other words, this limitation can suppress the adhesion of the workpiece. However, this reduction in the amount of boron causes a reduction in the hardness (the hardness of TiN is lower than TiB_2). Consequently, the wear resistance decreases when the TiBN layer is exposed. The present invention compensates for this decrease by the TiBN layer having a sufficient thickness and the inner layer having a columnar-crystal structure so that the wear resistance can be improved.

In other words, the claimed amount of boron in the intermediate layer can suppress the adhesion of the workpiece. However, this reduction in the amount of boron causes a reduction in the hardness (the hardness of TiN is lower than TiB_2). Consequently, the wear resistance decreases when the TiBN layer is exposed. The present invention compensates for this decrease

by the TiBN layer having a sufficient thickness and the inner layer having at least one columnar-crystal structure so that the wear resistance can be improved.

Moreover, JP 58-67858 fails to disclose or remotely suggest an inner layer having at least one layer having a columnar-crystal structure. The Examiner has dialed to identify where the reference discloses this claim feature. Accordingly, claim 13 is free from the applied art for at least this reason.

Further, JP 58-67858 fails to disclose or remotely suggest an intermediate layer having a surface roughness of 50 to 500 nm as required in claim 13. The Examiner asserted that the claimed surface roughness as required in claim 13. Applicants submit that the Examiner did not discharge the initial burden of establishing a prima facie basis to deny patentability to the claimed invention under 35 U.S.C. § 102 for lack of novelty, and that the Examiner's reliance upon the doctrine of inherency is misplaced. Inherency may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient to establish inherency. *In re Rijckaert*, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993). To establish inherency, the extrinsic evidence must make clear that the missing element must necessarily be present in the reference, and that it would be so recognized by persons of ordinary skill. *Finnegan Corp. v. ITC*, 180 F.3d 1354, 51 USPQ2d 1001 (Fed. Cir. 1999); *In re Robertson*, 169 F.3d 743, 49 USPQ2d 1949 (Fed. Cir. 1999); *Continental Can Co. USA v. Monsanto Co.*, 20 USPQ 2d 1746 (Fed. Cir. 1991); *Ex parte Levy*, 17 USPQ2d 1461 (BPAI 1990). Based upon the foregoing, the Examiner has not established the requisite basis upon which to invoke the doctrine of inherency which requires certainty. In view of the foregoing differences between the present invention and that described in JP 58-67858, Applicants submit

that the Examiner has not established that the claimed surface roughness is inherently disclosed by JP 58-67858.

Claims 14-20 and 24 were rejected under 35 U.S.C. § 103(a) predicated upon JP 58-67858. Applicants respectfully traverse.

Applicants incorporate herein the arguments previously advanced in traversal of the rejection of claims 13, 21-23 and 25-27 under 35 U.S.C. § 102(b) predicated upon JP 58-67858. Independent claim 14 is patentably distinct over the applied reference for at least the same reasons as independent claim 13 described above. Accordingly, the rejection under 35 U.S.C. § 103(a) is not legally viable and should be withdrawn.

It is believed that all pending claims are now in condition for allowance. Applicants therefore respectfully request an early and favorable reconsideration and allowance of this application. If there are any outstanding issues which might be resolved by an interview or an Examiner's amendment, the Examiner is invited to call Applicants' representative at the telephone number shown below.

Application No.: 10/501,527

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP



Brian K. Seidleck

Registration No. 51,321

600 13th Street, N.W.
Washington, DC 20005-3096
Phone: 202.756.8000 BKS:ldw
Facsimile: 202.756.8087
Date: December 27, 2005

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